COPPER ACRYLIC CONDUCTIVE PAINT

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1 PURPOSE

This smooth paint finish provides an electrically conductive coating on the surface of plastic substrates. It is normally used on the inside surfaces of plastic products to provide EMI/RFI shielding.

2 MATERIAL

This coating is an acrylic resin system, with copper added to provide the conductivity.

3 ADDITIONAL COATINGS

Since top coating may affect the copper acrylic finish, no subsequent coatings of any type are allowed, unless otherwise specified on the part drawing.

4 COLOR

The color will be reddish brown and is not intended to meet any Digital color standard.

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APPROVAL:

Art Clockedile, Systems Materials Engineering

5 APPEARANCE QUALITY

Unless otherwise specified, this finish shall meet a quality level of 5. The coating shall be uniform and continuous on all surfaces. Abrasion marks are acceptable if they do not extend through to the substrate; scratches that extend to the substrate are not acceptable. No rack marks or imperfections that may affect the continuity of the coating are permissible. This coating is a functional finish, and is not intended to be aesthetically appealing.

6 PHYSICAL PROPERTIES

Film Thickness - The film thickness shall be 0.002 to 0.004 inch, per ASTM-D-1005.
Surface Resistivity - The surface resistivity shall be .2 ohm per square or less, per DEC STD 092-3.
Adhesion - There shall be no loss of film when the tape is pulled from the scribed area, using the test of ASTM-3359.

Note

The coating shall age 72 hours minimum, or per the manufacturer's recommendation, before the remaining tests are performed.

Abrasion Resistance - Abrasion resistance shall be tested with a Tabor Abrader with CS-10 wheels and 1000 gram load per wheel at 0.0015-inch film thickness. There shall be no wear through to the base material after 1000 cycles.

Impact - Using a Gardener 160 Impact tester with a 2-pound rod, there shall be no loss of adhesion after submitting the coating to 50 inch-pounds impact.

Temperature/Humidity - A non-operating temperature/humidity test shall be performed in accordance with DEC STD 102. The Resistivity shall not increase more than 50% after the test, and there shall be no blistering, flaking, or other evidence of a loss of adhesion.

7 APPLICATION

Surface Preparation - Prior to application of this coating, all plastic surfaces shall be free of contamination. Typical types of contamination encountered are oils, mold release, dirt, and silicones. To clean the surface, use any standard method that is compatible with the plastic material.

Aging - Foamed plastics parts shall be aged sufficiently before coating to ensure that there are no gasses trapped in the film that could cause the film to blister at a later time.

Thinning - The variety of plastics in use requires proper selection of solvents for thinning, to produce acceptable coating without damage to the plastic.

Repair - This coating should be repaired only if the electrical properties have been impaired, not for cosmetic reasons. If repair is necessary, only approved material (see below) should be used. Although repair can be performed with a brush at assembly if necessary, it is preferable to replace the part and return the inadequate part to the finishing vendor fro repair, since spraying of this material must only be done in a spray-painting facility.

Approved Materials:
Unless otherwise specified on part drawing:
Isolex R-73. Isolex is a registered trademark of BEE Chemical.
BEE Chemical Co.
or
210C.
Supplier: Electro-Kinetic Systems, Inc.

8 GENERAL REQUIREMENTS

a. Since the coating must be compatible with the substrate plastic, the coating manufacturer should be consulted before the coating is specified on the drawing.

b. Coating may affect flammability rating of a part, in which case the part must be tested.

c. A Certificate of Compliance, indicating coating material used, must be submitted with each lot.

d. The combination of this paint with the base material shall have UL recognition for adhesive properties.

e. Use of this finish is a function of the implementation. Surfaces to which it is applied, the complexity of the part, and the use of this finish must be proven by actual product tests.

f. It is recommended that, on complex parts, a point-to-point ohms reading be specified on the drawing. The probes should be placed on diagonal corners of the part, and the ohms reading recorded. If this is determined to be a requirements, by Design Engineering, the part drawing shall specify location for probe placement and the maximum reading acceptable.